

## ABSTRACT

A catalyst layer 2 is formed by conductive particles 4 carrying catalyst particles 5, and a boundary layer 3 is disposed adjacent to the catalyst layer 2 and is positioned between a portion which is easily contacted with an oxygen gas and the catalyst layer 2. The boundary layer 3 is formed by the conductive particles 4 carrying the catalyst particles 5 and a catalyst-carrying amount in the boundary layer 3 is smaller than a catalyst-carrying amount in the catalyst layer 2, and a hydrophilic treatment is carried out on the conductive particles 4 of the boundary layer 3 by a hydrophilic material, such that the hydrophilic characteristics of the conductive particles of the boundary layer are higher than that of the catalyst layer.